REMARKS

Claims 29, 32, 34-36, 38, 39, 41, 42, 54, 56, and 57 are pending. Claims 1-28, 30-31, 33, 40, and 55 have been previously canceled; claims 54 has been canceled in this amendment; and claims 37 and 43-53 withdrawn from consideration. Claim 36 is allowed.

The rejections of claim 54 are moot in light of the cancellation of that claim.

Claims 29, 34, 35, 38, 41, 42, 56, and 57 stand rejected under 35 USC § 103(a) as being obvious over WO 200044472 (Insley US 6,280,824) in view of Jensvold et al. (6,153,097). This rejection is traversed.

Attached to this amendment is a table comparing certain elements in the claims in the application with the disclosures of the references cited. The undersigned attorney has studied the references, and if a listed element of the present claims was found in a reference, it was noted by its location in the reference in the table. A blank space in the table corresponding to a claim element indicates that no disclosure of that claim element was found in the reference. The table is a convenient summary of the differences between certain pending claims and the references. The abbreviated descriptions of the claim elements are for purposes of convenient presentation in the table and do not change the actual claim language or scope.

As shown by the comparison table, there are substantial differences between the disclosures of Insley '824 and Jensvold and the rejected claims. The reference patents lack the following elements of the rejected claims:

in claim 29,

1. at least one gas permeable, water impermeable microporous layer
2. coated with a gas permeable, polymeric coating

in claim 38,

3. gas permeable, water impermeable microporous membrane layer being oleophobic because of: i. coating of fluorochemical or fluoropolymer; ii. surface treated with ionizing radiation or plasma discharge in presence of gaseous fluorinated species; iii. fluorochemical additives in the layer; or iv. coating of polydimethylsiloxane.

in claims 56 and 57,

4. a microbial support layer on the gas permeable, water impermeable layer of part a.

As to difference number 1 above, the Examiner has said (Office Action p. 5) that, "Two adjacent contoured structure layers of Insley '824 correspond to Applicants' gas permeable, water impermeable layer and Applicants' gas delivery layer." Although Insley '824 discloses stacked contoured structured layers (Fig. 7) he does not disclose any of the layers being microporous. Insley speaks of film layers (Col. 3, ll. 27 and 58, col. 5, ll. 46 and 57, col. 6, l. 62, col. 7, ll. 3 and 7, and col. 8, ll. 15 and 21). Such films are not normally microporous.

The Examiner has correctly said (Office Action p. 6) that Jensvold teaches a microporous membrane; however, it is a hollow fiber membrane used to separate gases (Jensvold col. 12, ll. 19-31). There is no indication that Jensvold's membrane is a gas permeable, water impermeable microporous membrane, and there is no indication of the desirability of combining Jensvold's hollow fiber membranes into the filtration media array of Insley, intended for such applications as furnace filters and air conditioner filters (Insley '824 col. 9, ll. 38-43).

As to difference number 2 above, the Examiner (Office Action pp. 5 and 7) has said that Insley's planar cap layer (Fig. 5) reads on Applicants' gas permeable polymeric coating. This is not the case because Insley does not disclose his cap layer as a coating, but rather a functional layer such as a sorbent or particulate filter, a series of stabilization filaments or strengthened non-woven (col. 4, ll. 4-6). Insley's cap layer 11 is planar (col. 8, l. 27 and Fig. 5); whereas a coating conforms to the shape of the substrate on which it is applied.

As to difference no. 3, the Examiner (Office Action p. 5) has stated that, "Insley '824 teaches the structure film layer containing fluorochemical additives (column 6, lines 35-37)." Although fluorochemical additives are taught in Insley, they are not taught as additives to a gas permeable, water impermeable, microporous membrane. Instead, they are taught in Insley as additives to filter layers, i.e., layers in a filter used as an air conditioner or furnace filter.

As to difference no. 4, near the bottom of Office Action page 5, the Examiner has cited Insley column 8, lines 40-45 for a layer of non-woven fibrous material over the face surface. She has said, "Likewise, the filter layer is located on the cap layer opposite to the contoured film layer." There is no support for this assertion in the Insley patent. Insley itself shows it is not true. At column 8, lines 46-65, column 11, lines 13-29, and column 12, line 9, Insley describes hot wire cutting his filtration media array, slicing it at a depth of 5 to 40 mm. His description shows that the flow channels are for filtration of a stream (of gas) flowing perpendicular to the

array of channels, not for delivering a gas from flow channels to bacteria on the surface of his cap layer through pores in the cap layer. The face of the array over which the non-woven is placed represents the ends of the flow channels formed by Insley's stacked contoured films 10 and cap layers 11. Thus, Insley's non-woven is not placed over the cap layer, and there is no way in Insley's arrangement to introduce air into a gas delivery layer, allow it to flow through a gas permeable, water impermeable layer proximate the gas delivery layer and to a microbial support layer on the gas permeable, water impermeable layer.

The modifications necessary to overcome the above-recited differences and arrive at the presently claimed invention, are too great to be obvious to one of ordinary skill, without the hindsight benefit of the present applicants disclosure. The Examiner has said (Office Action p. 8) that there is a reason for combining Insley '824 with Jensvold, namely that they are both related to separation devices. The Examiner has said, "Insley '824 teaches every element of the presently claimed subject matter except the contoured structured layer being formed from a microporous membrane or foam." She has asserted that one skilled in the art would be motivated to replace the contoured structured layer of Insley with the microporous membrane or foam of Jensvold for high separation efficiency, cost effectiveness, improved mechanical properties and higher resistance to temperature variation (Jensvold col. 1, ll. 24-26, and col. 2, ll. 1-5). This ignores the fact that Jensvold states these desirable properties for gas separation, not for a membrane that is impermeable to water and gas permeable.

There is no reason for a skilled person to believe that the hollow fiber membranes of Jensvold would function in the filtration media arrays of Insley. One wishing to improve Insley's filtration media array (used in furnace filters and air conditioner filters) would not logically look to Jensvold's teaching on an internal, staged permeator that separates a mixed gas stream into permeate and retentate streams (used in such processes as distillation and pervaporation (Jensvold col. 13, ll. 31-45). There is no reason to believe that Jensvold's hollow fiber membranes would give the benefits to Insley's filter media arrays which the Examiner claims.

Attached hereto is a Declaration Under 37 CFR 1.132 by Thomas I. Insley, first-named inventor of the Insley patent. In his Declaration, Mr. Insley, who had read the present patent application, states that in his opinion it is not obvious to combine the teachings of Jensvold with his patent for the reasons given in paragraph 4 of his Declaration. Namely: the mechanism by

which the Insley filtration media operates is different from the Jensvold apparatus (an array of flow channels through which air flows versus Jensvold's flowing gas through the bore side of fibers and out through the fiber walls); and Jensvold's hollow fiber membranes would not function in the Insley patent invention, since there is no means disclosed in the Insley patent for using hollow fiber membranes. Thus, Mr. Insley's Declaration supports the reasoning given above, contrary to the obviousness of this combination of references.

Claim 32 stands rejected under 35 USC § 103(a) as being unpatentable over WO 200044472 in view of Jensvold et al. (6,153,097) and WO 99/65593 (U.S. 6,524,488). This rejection is traversed. This rejection is traversed.

Insley '488 has been cited for its disclosure of a flow channel layer having two sides with a plurality of walls on both sides. However, despite this disclosure in Insley '488, as the attached comparison table shows, the differences discussed above between the claims and the other references (Insley '824 and Jensvold) remain as to the art combination cited against claim 32.

Insley '488 teaches filtration media comprising at least a layer having a structured surface that defines highly ordered fluid pathways. A fluid (e.g., air) flows through ordered pathways defined by channels 25 so that particulates are removed by exclusion and/or adherence to structured surfaces (col. 5, ll. 42-48). The Insley media are designed so that fluid (e.g., air) flows through numerous stacked layers 12 with channels 25 for filtration. There is no relationship between the depth loading filtration media of Insley '488 and an air permeable, water impermeable micro-porous layer coated with a gas permeable, polymeric coating, as required in claim 32. The structures and modes of operation of the Insley '488 media and the presently claimed layered sheet constructions are different.

The Examiner has said (Office Action p. 9) that, "Jensvold uses the same materials to form the microporous membrane as Applicants." As discussed above, this is not the case. Hollow fiber membranes are not necessarily the same as microporous, gas permeable, water impermeable layers, and Jensvold has not disclosed his hollow fiber membranes as being both gas permeable and water impermeable.

All the arguments made above with regard to Insley '824 and Jensvold apply to this rejection of claim 32. Adding a double-sided structured layer from Insley '488 to the filtration

media array of Insley '824 would not bring one any closer to claim 32 than the combination of Insley '824 and Jensvold comes to claim 29.

Claim 39 stands rejected under 35 USC § 103(a) as being unpatentable over WO 200044472 in view of Jensvold et al. (6,153,097) and WO 99/65593 (U.S. 6,524,488) further in view of Taniguchi et al. (6,322,703). This rejection is traversed.

Taniguchi has been cited for its disclosure of pore size within the range of rejected claim 39. Taniguchi teaches a method for purifying aqueous suspensions with a module comprising wavy hollow fiber membranes. The teaching of Taniguchi is about hollow fiber membrane filtration of water, and the recited pore size is for pores in hollow fibers, not in microporous membranes.

As shown by the attached comparison table, the differences between claim 32 (from which claim 39 depends) and Insley '824 and Jensvold discussed above exist as to the combination of patents including Taniguchi. The same reasoning supporting non-obviousness given above applies to this rejection.

The rejections depend, in large measure, on: the Examiner's assertion that substituting a microporous hollow-fiber membrane from Jensvold into the filtration media array of Insley '824 is obvious; and a presumption that the hollow fiber membranes of Jensvold are indeed gas permeable and water impermeable. Neither the assertion nor the presumption have been established.

The Examiner has said (Office Action p. 8) that one would be motivated by Jensvold's teaching of high separation efficiency, cost effectiveness, improved mechanical properties and higher resistance to temperature variations (Jensvold col. 1, ll. 24-26 and col. 2, ll. 1-5). However, these advantages are taught in Jensvold with regard to gas separation (i.e., separating a gas stream into different components), not with regard to air filtration (Insley's application). Jensvold teaches a gas separation device (abstract, col. 4, ll. 27-31 and col. 12, ll. 19-21). He speaks of a set of fibers ranging from 0.01 to 5 million fibers per set (col. 7, ll. 31-32). The operating mechanism of Jensvold's membranes is permeation of a component of a gas stream through hollow fiber (col. 11, ll. 35-37) not flow through channels as in Insley '824. Jensvold separates volatile from non-volatile components of a gas stream (col. 13, ll. 36-39). Fluid goes in the bore side of Jensvold's membranes and part of it (called the permeate) permeates through the

hollow fibers into another region (col. 14-15). His hollow fiber membranes would not work in combination with Insley '824 because there is no way disclosed in Insley to use hollow fiber membranes or to feed the bore side of hollow fiber membranes. The attached Rule 132 declaration supports this reasoning.

Therefore, the Examiner's assertion of motivation is not fairly based. There can be no reasonable expectation of success in achieving the invention of the claims rejected for the reasons given above, and because neither Jensvold nor Insley '824 discloses a microporous membrane said to be both gas permeable and water impermeable in combination with a gas delivery layer comprising a base having a side with a plurality of walls forming separate flow channels.

The inventive layered sheet construction is in the field of wastewater treatment, for application as a membrane on which bacteria grow on the outside, being fed oxygen (or air) through the flow channels and pores of the microporous membrane. There is no reason why a person aware of Insley '824 and Jensvold would expect success in such a membrane through combining these references.

In view of the above discussion, it is respectfully submitted that claims 29, 32, 34-36, 38, 39, 41, 42, 56 and 57 are in condition for allowance. Withdrawal of the rejections under 35 U.S.C. 102 and 103 are requested, and a notification of allowability is respectfully solicited. If any issues or questions remain the resolution of which the Examiner feels would be advanced by a conference with Applicants' attorney, she is invited to contact such attorney at the telephone number noted below.

Respectfully submitted,

June 7, 2005
Date

By: Douglas B. Little
Douglas B. Little, Reg. No.: 28,439
Telephone No.: (651) 733-1501

Office of Intellectual Property Counsel
3M Innovative Properties Company
Facsimile No.: 651-736-3833

U.S.S.N. 10/017632	**Insley WO 00/44472 (US 6280824)**	**Jensvold** US 6153097	**Rolando** US 5,078,925	**Insley WO 99/65593 (US 6,524,488)**	**Taniguchi US 6,322,703**
Claims 29, 32, 56, 57 a. ≥1 gas permeable, water impermeable layer					
comprising microporous layer		Col. 8, ll. 8-9			
Claims 29 & 32 coated with gas permeable, polymeric coating					
b. gas delivery layer proximate layer a. comprising base having side with plurality of walls forming separate flow channels through which gas can be conveyed to layer a.	contoured film Figs. 1-4, col. 3, ll. 46-59				
Claim 38 layer a is oleophobic because of i. coating of fluorochemical or fluoropolymer; ii. surface treated with ionizing radiation or plasma discharge in presence of gaseous fluorinated species; iii. fluorochemical additives in layer a.; or iv. coating of polydimethylsiloxane	Fluorochemical additives for oil repellency, **but not for gas permeable, water impermeable microporous layer**, col. 6, ll. 35-41				
Claims 56 & 57 microbial support layer on layer of part a					
Claim 56 loaded with filler: peat, lignite, coal, coke, charcoal, activated carbon	col. 6, ll. 50-51				
Claim 57 carrying a net positive surface charge	charged – col. 5, l. 47-col. 6, l. 33				

Patent
Case No.: 56754US002

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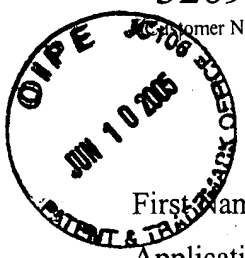
Customer Number



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	HESTER, JONATHAN F.		
Application No.:	10/017632	Group Art Unit:	1771
Filed:	December 14, 2001	Examiner:	Hai Vo
Title:	LAYERED SHEET CONSTRUCTION FOR WASTEWATER TREATMENT		

DECLARATION UNDER 37 CFR § 1.132

Thomas I. Insley declares that:

1. He is the first-named inventor of U.S. Patent 6,280,824.

2. He has a Bachelor of Science Degree in Chemical Engineering from the University of Maryland, and a Master of Science Degree in Chemical Engineering from Montana State University. He has been employed at 3M Company in St. Paul, Minnesota, since 1982 and is a named inventor on 42 US patents and 4 pending US patents in the fields of sorbents, filtration media, electrets, and micro-replicated structured films.

3. He has read: the above-referenced patent application, US Patent 6,280,824, and US Patent 6,153,097. He has also discussed the Examiner's Office Action in the above-referenced patent application dated March 22, 2005, with the attorney prosecuting that application insofar as it has applied the combination of the Jensvold patent (US 6,153,097) with his patent (US 6,280,824).

4. In his opinion, it is not obvious for a person of skill in the art to combine the teachings of Jensvold with his patent for the following reasons:

(a) Jensvold is a teaching regarding an apparatus which utilizes hollow fiber membranes in which the flow of gas is into the bore side of the fibers and out through the walls of the fibers. On the other hand, the flow of gas (air) through the filtration media of his '824 patent is through flow channels (illustrated as 14 and 16 in Figure 5 of the '824 patent). The array of such flow channels illustrated in Figure 6 of his '824 patent shows the face of the '824 patent filtration media array, and air flow is into or orthogonal to that filter media face.

(b) Jensvold's hollow fiber membranes would not function in the Insley '824 invention, since there is no means disclosed in Insley '824 for using hollow fiber membranes (e.g. to feed the bore side of hollow fibers).

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements, and the like so made are punishable by a fine or imprisonment or both, under 18 USC 1001, and that such willful, false statements may jeopardize the validity of the application or any patent issuing thereon.

June 6, 2005 By: Thomas I Insley
Date Thomas I. Insley